Linguistic Complexity

Karen Davies
Office of Assessment
Accessibility Specialist

What is Linguistic Complexity?

- Linguistic complexity addresses aspects of language that make communication easier or less complex.

- Office of Assessment reviews assessment stimuli and items to reduce this complexity for all students.
  - Cook and MacDonald's Rubric

Three Aspects of Linguistic Complexity

- Text Density

- Language Form and Structure

- Vocabulary

Cook and MacDonald's Rubric

Dimensions	1	2	3	4
Information Density	Average of 1-3 verbs, nouns, pronouns or adjectives	Average of 4-6 verbs, nouns, pronouns or adjectives	Average of 7-10 verbs, nouns, pronouns or adjectives	Average of 10+ verbs, nouns, pronouns or adjectives
Passage Length	1-3 paragraphs	4-6 paragraphs	6-10 paragraphs	10+ paragraphs
Language Form and Structure	All simple sentences	Less than half of item contains complex sentences	Half of item contains complex sentences	More than half of item contains complex sentences
Vocabulary	All high frequency words	Few (2-3) content specific metaphoric words	More (4-6) content specific metaphoric words	More (7+) content specific metaphoric words

Text Density

- Text Density is calculated by averaging the information density and passage length components.
  - Information density is the ratio of the number of specific types of meaning-carrying words to the number of independent clauses.
  - Passage length is simply the number of paragraphs.

Text Density Ex.

EXAMPLE 1: Language from a fourth grade reading passage[2]

The whistle blows, // and I hit him fast with a fireman's carry. // He's on his back in three seconds. // The ref's hand slaps the mat. // Pinned. // One match down.

David M. Simon's *Tough as Daisy*

Indiana Department of Education

Language Form and Structure

- A 4-point rating scale is used to rate simple and more complex sentences.
- Close attention is paid to relative clauses, passive voice, and adverbial phrases.
- The style structure of sentences includes short simple sentences and longer complex sentences with multiple clauses.

Language Form and Structure Ex.

(1) "What do bees do?" (2) Ask most people and they will say, "Bees make honey and they sting." (3) They may even tell you that bees are fuzzy, black-and-yellow insects that live in hives. (4) But there are lots of kinds of bees, and they're not all the same. (5) Some fly at night. (6) Some can't sting. (7) Some live only a few months, and others live several years. (8) Every species of bee has its own story. (9) A species is one of the groups used by scientists to classify, or group, living things. (10) Animals of the same species can mate with each other. (11) And they give birth to young that can mate and give birth, or reproduce.

Declarative, interrogative, imperative or exclamatory sentences that just have a subject (if needed), verb and object with basic verb tenses are classified as simple sentences. In the passage above, the first, fifth, sixth, eighth, and tenth sentences are simple sentences.

(1) "What do bees do?"

(5) Some fly at night.

(6) Some can't sting.

(8) Every species of bee has its own story.

(10) Animals of the same species can mate with each other.

This passage has several compound sentences: the second, fourth, and seventh sentences:

(2) Ask most people and they will say, "Bees make honey and they sting."

(4) But there are lots of kinds of bees, and they're not all the same.

(7) Some live only a few months, and others live several years.

It also has several sentences with relative clauses: the third, ninth, and eleventh sentences.

(3) They may even tell you that bees are fuzzy, black-and-yellow insects that live in hives.

(9) A species is one of the groups used by scientists to classify, or group, living things.

(11) And they give birth to young that can mate and give birth, or reproduce.

Vocabulary

- A 4-point rating scale is used to rate lexical items from everyday vocabulary to higher technical words.
    - Metaphors
    - Idiomatic expressions

Vocabulary Ex.

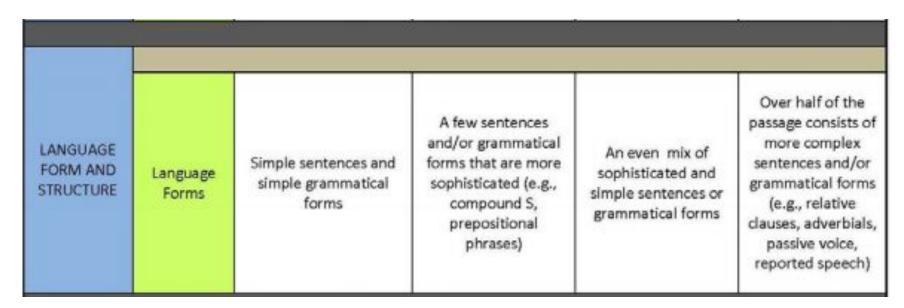"I have a lot of the cat in me and cats are not joiners."

The word *cat* is a common vocabulary word, but White uses it metaphorically to indicate his solitary, independent nature.

Cook and MacDonald's Rubric

TEXT DENSITY		Descriptors			
		1	2	3	4
	Information Density	An average of one to three verbs, nouns or adjectives per sentence	An average of four to six verbs, nouns or adjectives per sentence	An average of seven to ten verbs, nouns or adjectives per sentence	An average of greater than 10 verbs, nouns or adjectives per sentence
	Passage Length	One to three paragraphs	Four to six paragraphs	Six to ten paragraphs	More than ten paragraphs

Cook and MacDonald's Rubric

LANGUAGE FORM AND STRUCTURE	Language Forms	Simple sentences and simple grammatical forms	A few sentences and/or grammatical forms that are more sophisticated (e.g., compound S, prepositional phrases)	An even mix of sophisticated and simple sentences or grammatical forms	Over half of the passage consists of more complex sentences and/or grammatical forms (e.g., relative clauses, adverbials, passive voice, reported speech)

Cook and MacDonald's Rubric

VOCABULARY					
	Vocabulary	All high frequency, commonly used vocabulary	Few content-specific,, metaphoric, uncommon meaning, or idiomatic words	A number of content-specific, technical, metaphoric, uncommon meaning and/or idiomatic words or expressions	A large number of content-specific, technical, metaphoric, uncommon meaning or idiomatic words or expressions

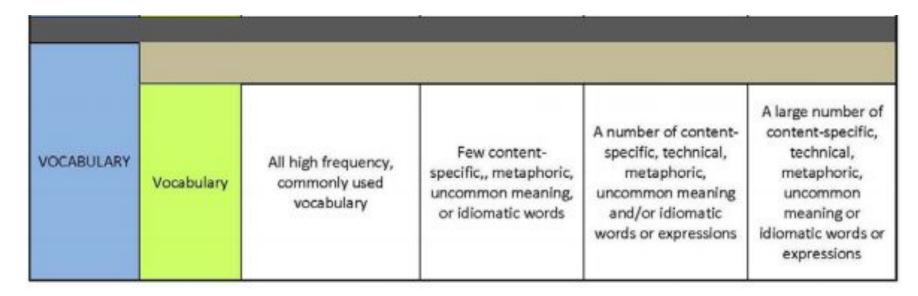# Scoring Items with the Rubric

Text Density	Language Form and Structure	Vocabulary	Linguistic Complexity
Information Density= 2 Passage Length=1 Text Density= 1.5	Language Form and Structure= 2	Vocabulary= 2	Linguistic Complexity= 5.5

Scoring Items with the Rubric

Patty expects that each tomato plant in her garden will bear 24 tomatoes. If there are 6 tomato plants in her garden, how many tomatoes does she expect?

A.   4
B.   18
C.   30
D.   144

Did you use the calculator on this question?

Scoring Items with the Rubric

Patty expects that each tomato plant in her garden will bear 24 tomatoes. If there are 6 tomato plants in her garden, how many tomatoes does she expect?

A.   4
B.   18
C.   30
D.   144

Did you use the calculator on this question?

$$15 / 5 = 3$$

Thank you

Karen Davies
Office of Assessment
Accessibility Specialist
KDavies@doe.in.gov
317-232-2079